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THE CREPITANT RALE: ITS NATURE AND CONDITIONS OF PRODUCTION.¹

BY W. H. WORKMAN, M. D., OF WORCESTER.

FROM the time of the introduction into medical science of physical examination of the chest, the crepitant râle has been considered one of the most important and interesting of auscultatory signs, and its nature and causation have furnished an ever-fruitful theme for speculation. Of the various hypotheses put forth to explain this phenomenon, the two which have obtained an especial prominence are, first, that proposed by Laennec and adopted by Skoda, Barth and Roger, Andral, and others, which ascribes the râle to the bursting of small bubbles created by the passage of air through liquids contained in the air vesicles; and, secondly, that advocated by Carr, Wintrich, and Parrot, which refers the sound to the sudden separation of the vesicular walls during inspiration, these having been closely applied to one another during expiration. This hypothesis has of late years steadily gained in favor with the profession, although no very satisfactory explanation could be given of the manner in which the alveolar walls might be brought in contact during expiration. It was not until the recent experiments of Cornil and Grancher upon the cadaver that the truth of this was placed beyond question, and also direct evidence obtained of the *modus operandi* of the forces involved. Without occupying time in discussing ideas now exploded, allow me to call your attention as briefly as possible to the facts bearing upon the *aetiology* of this râle, and the conclusions to be drawn from them.

By the crepitant râle is generally understood the fine, dry, crackling sound, resembling that produced by rubbing a lock of hair between the fingers near the ear, which is heard under certain circumstances upon auscultation of the chest. It occurs in little puffs or blasts, is not dissipated by coughing, but rendered more distinct by this act, and is perceived only during or at the end of inspiration. This last peculiarity distinguishes it with certainty from the only two auscultatory sounds with which it is liable to be confounded, namely, the subcrepitant râle,

¹ Read before the Massachusetts Medical Society, June 13, 1876

and a certain variety of friction-sound, both of which are heard not only on inspiration, but also on expiration.

As regards the anatomy of the lung, it is only necessary to premise that the delicate connective-tissue septa between and inclosing the air vesicles are richly provided with elastic fibres, which pass thence along the bronchial walls to the root of the organ, tending to draw all parts inward upon this point when the expanding force is removed.

If artificial respiration be made upon a cadaver in which the lungs are free from disease, care first being taken to clear the trachea of any mucus or liquid which may have accumulated therein, the respiratory sounds will be found to be the same as in health. If the walls of the chest, including the parietal pleura, be then removed and the lung laid bare, it is seen to collapse in virtue of its elasticity, aided by the atmospheric pressure from without. Artificial respiration being again resorted to, and auscultation practiced with the ear placed near the lung or with the stethoscope, a new sound is heard which could not be detected while the parietes of the chest were intact. After a certain quantity of air has entered the lung, a fine, dry crepitus is perceived, which, although perhaps somewhat finer and dryer, is otherwise identical in character with the crepitant rôle. This continues to the end of inspiration and then ceases. It is not heard in expiration, but reappears with each succeeding inspiratory movement. Cornil applies the name vesicular crepitation to this sound.

It is a well-known fact that in health the lung always contains a certain quantity of residual air, which, in the absence of external pressure, serves to counterbalance the elastic contractility of the lung, so that the alveolar walls, although approaching one another somewhat, do not come in contact in expiration. In inspiration no vesicular crepitation can be heard. The same holds true of the cadaver with healthy lungs and intact thoracic walls. So soon, however, as the pleural cavity is opened and the lung exposed to the pressure of the external air, the pulmonary tissue contracts strongly and expels the residual air to such a degree that the alveoli¹ are effaced and their septa applied closely to one another. The latter are then separated suddenly by the entrance of the air on inspiration, giving rise in each alveolus to a fine explosion, which, being reinforced by similar ones in the neighboring alveoli, occasions the fine crackling peculiar to the vesicular crepitation. Hence the production of this sound in the experiment cited depends on two conditions: first, the abolition of the vesicular spaces and contact of the vesicular walls during expiration; and, second, the sudden restoration of the same to their former state by the penetration of the air during inspiration.

¹ Whatever is said of the alveoli and vesicular spaces must be understood to apply with equal truth to the infundibula, into which they open. The terminal bronchioles are probably also concerned in the production of the crepitant rôle, though this has not been proved.

Here the first condition is induced by the internal elastic traction aided by the external atmospheric pressure. That the same effect may be caused by intra-thoracic pressure upon the pulmonary tissue will be seen as we proceed. The action of the second condition is well illustrated by the simple experiment proposed by Carr, which consists in pressing firmly together near the ear the thumb and forefinger moistened with some viscid substance and then separating them.

Physiology furnishes two familiar examples of vesicular crepitation, or, as it might with propriety be called, the crepitant rôle. When a person during illness or in the sleeping state has for some time lain quiet upon his back, if the first long inspiration thereafter be ausculted, the vesicular crepitation is perceived, ceasing in the following inspirations. Here the quietness of the respiration, the weight of the pulmonary tissue, and the immobility of the dorsal portion of the thoracic walls, have caused the collapse of a greater or less number of peripheral alveoli, which expand again in the first full inspiration.

In the new-born infant, auscultation of the first few inspirations by which the hitherto atelectatic lungs are aerated, discovers most strikingly the vesicular crepitation.

In 1872-73, a series of experiments upon the cadaver were performed by Cornil and Grancher in Paris, with a view to determining the causes of the various normal and abnormal respiratory sounds. Of these the two following have an important bearing upon our subject.

In the first experiment a cadaver with healthy lungs was procured, and fifty to one hundred grammes of melted tallow injected into the pulmonary tissue by means of a syringe provided with a small trocar, which was introduced through one of the intercostal spaces in such a way that no air from without was allowed to enter. Care was also taken that the tallow should not penetrate and fill the bronchi, and thus obstruct the passage of the air through them. In this manner a nodule in the lung was formed, solid and impermeable to air. Auscultation over and in the neighborhood of this nodule during artificial respiration revealed plainly, on inspiration, the vesicular crepitation. If the respiration was made slowly, allowing the lung time to retract upon itself, the crepitation was found to be permanent, occurring during each succeeding inspiration or just at its end. The nearer the surface of the lungs the tallow was injected the more clearly could the crepitation be heard, and if the nodule was large it was perceived more distinctly at the circumference than at the centre. The parietes were now removed, and the situation of the indurated mass was found to correspond with the crepitation observed. Auscultation of the uncovered lung showed a similar though still more marked result. In order to assure themselves that the crepitus was not formed in the indurated portion, the latter was divided with a knife, and the inclosed bronchioles, infundibula, and alveoli, seen to be entirely filled with the injection.

In the second experiment the tallow, instead of being injected into the lung, was introduced without wounding that organ into the pleural cavity, forming a hard mass spread out between the lung and the walls of the chest. The crepitation was heard as in the first experiment, over and around the circumference of the injected tallow. The inserting of bits of wood into the fissure between the lobes was found to have the same effect.

The explanation of the phenomenon was as follows. The alveoli and infundibula, dilated and filled with the tallow, form a solid mass within the chest, which occupies the same space during expiration as during inspiration. This is not the case with a similar amount of lung tissue, which diminishes considerably in volume in expiration. Hence, in expiration, pressure is exercised upon the alveoli surrounding the nodule and their cavities are effaced. The succeeding inspiration restores them to their former condition with the production of the crepitus.

Thus it is seen that, in the normal lung, a crepitation can be produced identical in character with the crepitant râle, and like it heard only during or at the end of inspiration; that this sound depends on physical causes, inducing by pressure applied in various ways obliteration of the alveoli during expiration, and permitting the restoration of the same during inspiration.

These facts having been noticed, it remains to consider the diseases in the course of which the crepitant râle occurs. Such are croupous pneumonia, chronic catarrhal, interstitial, and broncho-pneumonia, tuberculosis, haemorrhagic infarction, pleuritis, tumors, gangrene. Although the pathological processes in the group indicated are so diverse, yet the same final physical result is attained in all, namely, the formation within the lung or at its surface of a body impermeable to air, and comparatively incompressible, surrounded or bordered by a tissue either normal or so little changed as to be capable of aeration. This state of things will be seen at a glance to be the physical counterpart of that which may be artificially induced, and which, when so induced, gives rise to the vesicular crepitation. We are therefore warranted in assuming the same mode of production for the crepitant râle, the more especially since the latter is absent in those diseases unfavorable to the development of the above conditions. Clinical and pathological observation furnish proof of the truth of this assumption.

In croupous pneumonia, the best authorities tell us, it is not in the first stage, or stage of congestion, that the crepitant râle manifests itself. It is only after exudation has commenced, and groups of alveoli over a space more or less extended have become solidified, as evidenced by dullness and modified respiration. While the solidified portion is yet small, the râle is heard over it or in its immediate vicinity; but as the former increases in extent the latter changes its seat, being per-

ceived only at the circumference or edge bordered by normal tissue. As the exudation at any point becomes complete, the râle at that point is replaced by bronchial respiration. When a whole lobe is rendered solid, the crepitus can be detected only along the line bordering the adjacent unaffected lobe.

The congested condition of the zone of tissue immediately around the indurated part cannot be said to have any direct influence in causing the crepitant râle, since the latter does not occur in simple congestion, or in the congestive stage of pneumonia, and the vesicular crepitation is produced without the presence of any congestion whatever. Probably, however, the slight thickening of the vesicular walls incident to congestion favors the râle indirectly by compromising somewhat the vesicular spaces, thus rendering them more easily effaceable, and also serves to make it rather less fine and dry than the pure vesicular crepitation.

Clinical experience shows what would naturally be inferred from what has been said, namely, that the crepitant râle may persist till convalescence is quite far advanced. As the exudation softens and is removed by expectoration and absorption, the tissues again become accessible to the air, and again subject during expiration to compression by the yet solidified portions. Hence the persistence of the râle and its reappearance in places where it had been replaced by bronchial respiration. But in general the so-called râle crepitans redux of the resolving stage of pneumonia is a subcrepitant râle, heard with both acts of respiration, and due to the action of the air on the liquids contained in the smaller bronchi.

In the pathological changes called broncho-pneumonia, chronic catarrhal pneumonia, interstitial pneumonia, and tubercle, which separately or combined are found in the lung in the disease known as phthisis, if the chest be ausculted in the neighborhood of the indurated foci, provided these be situated sufficiently near the surface of the lung, fine, dry crepitant râles may be perceived. It is seldom that they are heard with the sudden sharp explosion so characteristic in croupous pneumonia, for the reason that the diseased areas are often so small, and shade off so gradually into the healthy tissues, that less opportunity is afforded for the effacement of the alveoli and the sudden restoration of the same. Under these circumstances the râles are usually more or less scattered, and so frequently associated with other sounds of more striking character, that their existence is likely to escape attention if care be not exercised.

Theoretically, haemorrhagic infarction fulfills better perhaps than any other morbid process the conditions obtaining in the first experiment above quoted. Here a circumscribed nodule of greater or less extent, with sharply defined periphery, exists, solid, inelastic, and immediately

surrounded by tissue, which, though congested, admits air freely. This case, minus the congestion, is exactly parallel with that of the suet injected into the substance of the lungs. As might be expected, crepitant râles are heard on auscultation, persisting a longer or shorter time, according to the further changes occurring in and around the infarction. When followed neither by abscess nor gangrene, the râles have been heard for days and weeks.

The second experiment in which the suet was introduced into the pleura finds its pathological analogue in pleuritis, the compressing force in both the cases being exterior to the lung. It is only, however, in the last stages of this disease, when the pain which interferes with full inspiration has passed away and the effusion has been mostly absorbed, that the crepitant râle is usually perceived. In this case the moderate remaining exudation or the false membranes covering the pleural surfaces serve in expiration to compromise the peripheral alveoli, which are restored by full inspiration with the production of a well-marked crepitant râle. Various authors who have recognized this have ascribed it to the friction of the pleural surfaces, but as it occurs only during inspiration such a view is untenable.

In gangrene of the lung the existence of the crepitant râle must be referred rather to the influence of the preceding and accompanying indurative processes, such as acute or chronic pneumonia, haemorrhagic or metastatic infarction, tubercle, etc., than to that of the disorganized portions. Where the gangrene results from certain influences causing direct softening of the tissues, it is doubtful if the râle could be perceived.

As regards tumors of the lungs, it is only necessary to say that they are known to give rise to unmistakable crepitant râles, and if there be several tumors in the lungs at the same time the râles will be heard in the corresponding situations.

To recapitulate. The crepitant râle has its seat in the alveoli and infundibula, and possibly also in the ultimate bronchioles, the walls of which have the same structure as those of the air-vesicles. It does not occur in the diseased parts, but in those immediately around remaining nearly or quite healthy. Its origin is purely physical, and is due, first, to compression from without, and, secondly, to expansion from within. The compression is produced by adjacent indurations resulting from disease. It makes no difference what the pathological process may be, provided an induration be formed in or at the surface of the lung in such a manner as to give rise to the two above-named conditions in a spot favorable to perception by the ear. Hence, the crepitant râle is peculiar to no one disease, as was formerly supposed, but may exist in several, each having its distinct pathological nature.

PURULENT CATARRH OF THE EAR.¹

BY JAMES A. SPALDING, M. D. HARV.

ACUTE purulent catarrh of the ear in adults may arise from a variety of causes, during the course of a chronic catarrh, or from exposure of the ears in various ways to the action of cold. In children, it occurs more frequently during the course of, or as one of the sequelæ to, the exanthematous diseases. Some authors have considered its presence as the cause of infantile convulsions. I have been unable to find much attention drawn to this point in any of the more recent works on the diseases of children, and even the well-known presence of purulent catarrh, during and after exanthematous diseases, is for the most part passed over slurringly. Von Tröltzsch, one of the greatest German authorities on diseases of the ear, mentions the result of a large number of pathological examinations of the ears of infants under one year of age, where he found in the tympanum and its neighborhood varying amounts of degenerated, cheesy, purulent deposits, which could have resulted in no other way than from an acute purulent catarrh of the ear. My idea in bringing this subject before you, especially in infantile cases, is to speak a few words as to the diagnosis. The great diagnostic symptom in infants suffering from an acute purulent catarrh of the ear in which there has been no flow of purulent matter from the external meatus, owing to the shortness of the Eustachian tube, which lets the pus flow off more easily than in adults, is the cry, which is distinguished from that present in diseases of the lungs, pleura, or larynx, in that in these latter affections the child can hardly ever cry aloud, and still less keep up a continuous cry. In acute purulent catarrh of the ear, in infants, this cry is continuous, loud, piercing, increasing with every motion and shaking of the body, and especially of the head, by every change of position, at every effort to swallow, and above all, at all attempts at nursing.

If in this way the attention of the physician is drawn to the ear, an objective examination may be now made, and if the diagnosis is confirmed, appropriate treatment may be resorted to.

In acute purulent catarrh in children and adults, the symptoms are more or less the same: intense and deep-seated pain in the ear, increasing with every motion of the body or head; deafness is present in greater or less degree; during the exanthematous diseases the pain is usually less than in an idiopathic case. There may be sooner or later a discharge from the ear.

The treatment is usually simple, and should be energetically employed, to prevent if possible either permanent deafness, from thickening-

¹ Read before the Cumberland County Medical Society, Portland, Me., March 29, 1876.

ing or perforation of the membrana tympani, or the bad results of a chronic purulent catarrh, with all its possible dangers and disagreeableness, as well as to relieve the patient as soon as possible from the agonizing pain.

The patient should be kept as quiet as possible, warm water should be frequently syringed or dropped gently into the meatus, warm poultices may be laid behind the ear, and one or two leeches may be placed in front of the tragus or below the ear, as from the relations of the vessels they will there sooner be able to relieve the congestion of the inflamed parts. It is sometimes advisable to plug the meatus with wool, to prevent the blood running in, or the accident of the leech itself crawling in. Morphia is often borne in large doses; but it should be remembered that it only quiets the pain, and does not remove the cause, nor bring speedier relief. If in the course of a few hours relief is not obtained, then there remain, as further steps of treatment, scarification, or even perforation of the membrana tympani; and this latter step is advisable if the presence of pus be detected behind the membrane. These operations can be performed with a common needle such as is used for paracentesis of the cornea, but still better with a needle made for the purpose, with a bend in the shank, which does not prevent the surgeon's seeing what he is doing. The object in scarification is to relieve the over-loaded blood-vessels, while in perforation we endeavor to hasten the removal of pus already seeking its way out from the tympanum. As a result of such treatment, many a case of acute purulent catarrh can be speedily relieved, and great damage prevented.

It is an indisputable fact that in no other part of the body would such a state of things as accompanies a chronic purulent discharge from the ears be allowed to remain for years untouched. It is a well-founded surgical rule that all deposits of pus elsewhere in the body should at once be removed, or attempts made in that direction. But in the ear, which lies as it were in contact with the brain, an accumulation of pus, or muco-pus, is allowed to remain for years, without any determined effort being made toward its removal, or to heal the causes which lead to it, and keep it a permanent drain upon the system.

Brief mention may be here made of the anatomy of the tympanum within or near which this pus is allowed to remain. Its floor lies just over the jugular vein, separated from it by an oftentimes transparent layer of bone; near by lies the internal carotid artery. Its ceiling, which also is not seldom thinned or even sieve-like, touches the dura mater, and the superior petrosal sinus. The inner or labyrinthine wall, offers but slight resistance to the encroachment of any inflammatory process, first upon the facial nerve, and second on the inner ear. Last of all we find, lying close to the tympanic cavity, the mastoid process of the temporal bone, with its net-work of cells, and the sinus transversus which lies directly behind it.

A chronic purulent catarrh of the ear is easily enough recognized by the continual presence of a discharge from the meatus, often offensive to the patient and those around him. Deafness is also present to a greater or less extent. The most common cause is a neglected case of acute purulent catarrh, either idiopathic, or, as is more frequent, as a sequel to various exanthematous diseases.

The first thing to be done, when such a case presents itself, is to cleanse thoroughly the meatus with warm water, so that the condition of the parts, which is often greatly altered by the presence of a long-standing discharge, can be accurately made out. The most common objective symptom is a perforation of the membrana tympani, which may vary from an almost invisible slit to entire absence of the membrane. The deafness will vary according to the size of the perforation, there being usually much better hearing with a large than with a small perforation, provided of course that some part of the membrane is still left standing, holding the bones of the ear *in situ*. Beyond the perforation, if it be large enough, can be seen the red and swollen mucous membrane of the promontorium, sometimes marked with raspberry-like granulations.

It is of prime importance to bring the mucous membrane to a healthy condition, if we would afterward heal the perforated membrane. Having carefully cleansed the meatus with warm water, it is then to be dried with cotton wool rolled round the end of the probe, always looking where the cleansing is being done, so that the bones of the ear, if still present, may not be broken or dislocated, thus causing oftentimes incurable deafness. This wad of wool should be very small, so as not to interfere with the view. Solutions, of varying strength, of nitrate of silver, from ten grains to the ounce of water to thirty grains, or even to a saturated solution if granulations be present, are then to be thoroughly applied with the same cotton pointed probe as during cleansing. Oftentimes the discharge is kept up by one small granulation, while the rest of the mucous membrane is in a comparatively healthy state. In such a case it can be easily seen how bad it would be to apply a strong solution of silver all over the mucous surface, and this is why I advise that we should always see what we are doing and not apply strong solutions indiscriminately. There is also another plan for bringing the mucous membrane to a healthy state, and this is to force warm astringent or alkaline solutions through the ear and Eustachian tube from without, by means of a syringe with a nozzle which fits air-tight into the external meatus. The patient holding his head down and to one side, the fluid runs out of the nostril. We must, of course, before using this method, first assure ourselves that the Eustachian tube is open. This procedure sometimes causes dizziness, which however lasts but a short time; still it is well worthy of trial in obstinate cases, as the seat of the discharge may be in a part of the tympanum inaccessible to touch.

During the intervals of treatment by the surgeon, the patient is to use as an ear lotion a solution of sulpho-carbolate of zinc, ten grains to the ounce of water, or sulphate of zinc, of the same strength, with a few drops of a solution of carbolic acid or liquor opii added. Various other astringents may be tried. It is well that all lotions should be made of double strength, so that when used they can be diluted with one half warm water, which makes them more agreeable to the patient and less dangerous.

The edges of the perforation in the membrana tympani may also be cautiously touched with solid nitrate of silver, applied with a fine probe; but I think it will be usually found that the edges of the perforation show tendency to heal when the mucous membrane of the tympanum becomes more healthy under careful treatment.

Let us suppose that as a result of such treatment as has been suggested, the discharge has at last stopped, and the edges of the perforation have reached a pretty healthy state. Considerable deafness may still be present. With the decrease of the discharge, there may be at first a decrease in hearing, but this will gradually disappear. But if we wish to try to increase the hearing at once, we may resort to the artificial drum, or to the plug of cotton wool, or we may try the effect of a piece of common note paper, cut out to the required shape, and gently placed over the perforation. With the first two methods, the patient is usually the best operator, for he can adjust the artificial drum or plug of cotton wool to best suit his hearing, while with the paper, the surgeon can best succeed. Either of these three methods may often bring about a marked increase of hearing, but it is well to be cautious about promising too much for the patient.

As was remarked before, the mastoid cells lie directly in contact with the tympanum, and it may happen that pus finds its way into them, especially when its passage outward is prevented by polypi in the meatus, or downward by occlusion of the Eustachian tube. If pus makes its way into the cells, it makes its presence known by redness, swelling, and tenderness over the mastoid region. It may make its own way outward and have a fistula, often obstinate to treatment, as the pus may burrow in all directions. If the presence of pus be suspected, a free incision, about an inch behind where the auricle joins the bone, should be made at once down through the periosteum, and from below upward, so that the knife if it slip may not wound the large vessels of the neck; and in very acute cases the bone itself should be carefully broken into by a gouge or chisel, or especially invented trepan. By keeping the incision well open, and now and then forcing warm alkaline or astringent solutions through the meatus, a greater portion of which will make its way outward through the broken-down cells, we may succeed after long and careful treatment in bringing about a healthy state of the parts involved.

The death-record and autopsy list of many a hospital show a large number of fatal cases due to the presence of pus in the mastoid cells, and its extension to the brain and its membranes. Passing by any detailed list of all the various cerebral troubles, as abscess, meningitis, and so on, which have thus been caused, brief mention may be made of facial paralysis, caused by a lesion of the facial nerve, as it passes through the Fallopian aqueduct, separated by a very thin plate of bone from the tympanum, in which there is a deposit of pus. Facial paralysis thus caused is more likely to be lasting than when due to other causes. The surgeon may here find himself at fault in his prognosis if he has overlooked the fact that a purulent deposit in the tympanum may be the cause of the lesion. We in such cases resort to constitutional treatment, but any purulent discharge from the ears must be especially treated before we can hope for lasting benefit.

Finally, we come to the most common accompaniment of a chronic, purulent discharge from the ear, one which is as it were at the same time effect and cause,—polypus of the meatus. On examining the meatus, its passage is seen to be more or less blocked up by a fleshy growth, which may be diagnosed from inflamed mucous membrane, by being movable by the probe. A polypus may be large or small, superficial or deep-seated. From its surface there is ever extending purulent matter, and the very presence of the growth not only keeps up the discharge from the meatus, but may lead to dangerous results by preventing its exit. If a polypus has a small base, or is pedunculated, also if it be superficially seated, it may be removed bit by bit, or even *en masse*, by snares, which we may do successfully if the meatus be large and roomy; but if the meatus be narrow, or if the polypus be deep-seated and with a broad base, then we must resort to the slower process of cauterization. Good success in this direction is attainable with solid nitrate of silver, but other caustics may in turn be tried. Whatever caustic is used, it is to be applied freely all over the exposed surface of the polypus, avoiding as much as possible any cauterization of the dermoid layer of the meatus. The caustic may be applied every other or every third day. Under its action a polypus often seems to melt away. If much pain ensue, it may be relieved by warm water. After the polypus has been entirely removed, its base must still be thoroughly cauterized, especially as in some cases there is a tendency to recur. There is no positive certainty, as to our prognosis, either as to the perfect removal of a polypus, or as to increase of hearing. A majority of cases, however, yield to careful treatment, and the hearing is oftentimes greatly improved.

In summing up the whole subject which we have now under consideration, it can be truly said that by energetic treatment of acute purulent catarrh of the ear we may often succeed in preventing any con-

siderable lesion of the parts concerned in hearing, as well as the possibility of a future chronic catarrh ; that the discharge due to chronic purulent catarrh can be rendered much less in amount or even entirely removed ; that deafness due to such discharge can be much diminished ; and that the stoppage of the discharge not only has not, as is almost universally supposed, a harmful effect on the system, but that on the contrary the general health of the patient can be and is thereby greatly improved.

I am informed that some of the more conservative life assurance companies, not only in England, but in this country, refuse to consider an applicant with a chronic purulent discharge from the ear as a safe risk.

RECENT PROGRESS IN THE TREATMENT OF CHILDREN'S DISEASES.

BY D. H. HAYDEN, M. D.

*Diphtheria.*¹ — The author² reports the results of his experience during an epidemic of this disease in Tunis. He classifies the disease into a mild form, a form with abortive infection, a severe form, and finally a hypertoxic form ; *i. e.*, when the general infection is so rapid that one is led to the conclusion that the general infection is the primary stage, and the disease of the pharynx the secondary, while the author, however, for all cases asserts the opposite. A very important guide for determining the severity of the disease is the amount of albumen in the urine, and the condition of the glands of the neck as to swelling. Of the sixty-four cases treated by the author, only two had paralysis as a sequel.

The author does not use any prophylactic treatment. He advises the parents only to examine daily the pharynxes of their children, in order, if necessary, to obtain the immediate attendance of their physician. The use of caustics is condemned, and locally and internally, partly carbolic acid, partly salts of sulphurous acid are used.

Of late the author has used with satisfactory results chloral hydrate dissolved in glycerine.

G. Calimani,³ since 1873, has had under treatment two hundred cases of diphtheria, and notwithstanding the employment of old and new remedies, amongst others salicylic acid, has lost one hundred and fifteen cases. Twice consecutive paralysis was observed, which rapidly recovered. In five cases, young girls, there was gangrene of the vulva, and in one case purpura haemorrhagica. A complication never before

¹ Centralblatt für Chirurgie, No. 14, 1876. G. Ferrini. G. Calimani.

² Annali univ. di Medic. & Chir. Maggio, 1875.

³ Gazz. Medica Ital. Lombardia, No. 52, 1875.

reported was noticed in fifty cases, namely, a peculiar disease of the last phalanx of the great toe, rarely of any other toe, and still more rarely of the left middle finger. A few days before the diphtheria made its appearance (probably in the prodromal stage) the last phalanx of the toe becomes red, later blue, and from the border of the nail there exudes a yellowish, offensive secretion. The nail itself was covered with a layer of yellowish-gray, shining matter. This affection, which might be called gangrene, becomes worse with the appearance of the diphtheria, until on the third or fourth day the patient dies. Of the fifty cases affected with this complication, not one recovered. These facts strengthen the opinion of those who consider diphtheria to be an epidemic, contagious, general disease.

*Treatment of Diphtheria.*¹ — In January of this year, in a very desperate case of diphtheria, after permission for tracheotomy was refused, the author tried a mixture of salicylic acid and lime-water (2:200). With this solution, which by the bye was perfectly clear, the throat was painted, and at the same time a dessert-spoonful of the same with an equal amount of milk was given internally every hour or half hour. After a few hours a membranous mass was coughed up, the breathing became easier, the swallowing also, and in two to three days recovery was complete.

Since, during an epidemic, without regard to what may be the chemical composition of this mixture, he has used it in the treatment of several cases. With older children it is used as a gargle; with smaller children, when obstacles to painting the throat are met with, it is given internally to be swallowed slowly.

In the author's ten years of practice he has never been so successful with any other mode of treatment, for in a large number of severe cases treated in this way he lost but one, and this fatal case was that of a child to whom it was impossible to administer the remedy in any manner.

The author proposes at a future period to give the cases in detail for publication.

The Internal Administration of Salicylic Acid in Diphtheria. — Four months before the publication of the therapeutical effects of this remedy in acute rheumatism, Dr. Julius Steinitz had employed salicylic acid in forty-five cases of diphtheria, thirty-four of which complicated scarlet fever, and eleven were idiopathic diphtheria. The medicine was given in powder form 0.1–0.12–0.2 grammes, to be taken in sweetened water, every one or two hours. Taken in this way, a small quantity is left behind in the glass, and this residue is easily taken up by the subsequent mixture of a little sweetened water with it. The cases were for

¹ *Allgemeine med. Central-Zeitung*, April 26, 1876, No. 34. Dr. Tenholt (Burgsteinfurt).

the most part severe ones as to the diphtheritic symptoms, and the fever high. In all cases the medicine was well tolerated. In a few isolated cases slight vomiting was excited by the first dose, which did not recur, however, with subsequent doses. As a rule, ten to twelve doses sufficed to remove the fever, and, with this number of doses, the diphtheritic process nearly always began to decline. A continuation of the remedy for a few days, given at greater intervals, effected a perfect cure. Of the forty-five cases thus treated, only two died of diphtheria, and one of the sequelæ of the disease. There were no injurious effects upon the digestive tube. The author has found that salicylic acid is best tolerated when given in this simple form. When prescribed in the form of solutions made up with other substances it often does not agree, and the corrigenda added serve to make it taste worse than otherwise. Salicylic acid has no influence on the sequelæ of the disease.

*Extractum Castaneæ Vescae e Foliis as a Remedy for Whooping-Cough.*¹—From a series of experiments with this remedy the author comes to the conclusion that the above extract is useful if in the first days of the disease the number of paroxysms does not increase or does not exceed twenty, when the catarrhal symptoms are moderate, and with patients that are anaemic. It is of no effect if the number of paroxysms exceed twenty pro die, when the bronchitis is severe, where there is broncho-pneumonia and alveolar atelectasis, or when there is swelling of the bronchial and mediastinal glands.

To infants up to one and a half years he prescribes :—

R7 Ext. cast. vesca fluid.
Syrup. mannat. ää 25
S. Teaspoonful every three hours.

For older children:—

R7 Ext. cast. vescae fluid.	40
Syrup. mannat.	20
S. One teaspoonful every three hours.	

*The Quantity of Breast Milk consumed by Sucklings.*²—M. Snitkin reports a long series of observations made during three years upon children of various constitutions from one day to a month old, given in tables arranged with great care and accuracy. The quantity of milk consumed was determined by the weight of the child just before and after nursing, and cases were placed under observation only when perfect reliability was assured. The sex had no influence on the amount of milk consumed.

The number of children under observation was 225, weighing from 1200 to 4500 grammes (about 3½ to 9½ pounds); the weight was determined in all 11,709 times.

¹ Oesterreich. Jahrb. f. Pädiatrik, 1875. Deutsche Med. Wochenschrift, No. 15, 1876. Allg. med. Central-Zeitung, April 26, 1876, No. 33.

² Jahresbericht des Kaiserl. St. Petersburger Findelhauses. St. Petersburger med. Wochenschrift, No. 10, 1876. Allg. med. Central-Zeitung, No. 27, April 1, 1876.

From the tables can be seen that with every day that the child comes older and heavier, the quantity of milk taken at one time becomes greater. The smallest amount was 10 grammes ($2\frac{1}{2}$ drachms), the largest (twice) 150 grammes (five ounces). The amount 227 times was 30 grammes (one ounce).

The amount with various nurses was generally with children that weighed

2000 to 2500 grammes ($4\frac{1}{2}$ to $5\frac{1}{2}$ pounds), 20 grammes (5 drachms).

2500 to 3000 grammes ($5\frac{1}{2}$ to $6\frac{1}{4}$ pounds), 20 to 30 grammes (5 drachms to one ounce).

3000 to 3500 grammes ($6\frac{1}{2}$ to $7\frac{1}{2}$ pounds), 30 grammes (1 ounce).

3500 to 4500 grammes ($7\frac{1}{2}$ to $9\frac{1}{2}$ pounds), 50 grammes (1 $\frac{1}{2}$ ounce).

During the first days 85.7 per cent. decreased in weight and were able to consume only 10 to 20 grammes ($2\frac{1}{2}$ to 5 drachms), which the author explains by the fact that most of the children were brought into the Foundling Asylum a few days after birth in a most wretched condition. If the infants had at one time consumed 90 to 100 grammes (3 to $3\frac{1}{2}$ ounces), when placed the next time on the breast they were only able to consume 10 to 20 grammes ($2\frac{1}{2}$ to 5 drachms). Infants from 2000 to 2500 grammes weight ($4\frac{1}{2}$ to $5\frac{1}{2}$ pounds) take rarely a very small quantity; infants from 4000 to 4500 grammes weight ($8\frac{1}{2}$ to $9\frac{1}{2}$ pounds) rarely very large quantities at one time.

There were 4059 observations made on 70 good suckling infants with strong healthy nurses. The average amount of milk consumed at each nursing with infants from 2000 to 4500 grammes weight ($4\frac{1}{2}$ to $9\frac{1}{2}$ pounds) was 50 grammes (1 $\frac{1}{2}$ ounces). As a rule, infants consume at one nursing in the first third of the month $\frac{1}{6}$ pound; in the second third, $\frac{1}{3}$ pound; in the third third, $\frac{1}{2}$ pound. Infants from 4000 to 4500 grammes in the first third, $\frac{1}{2}$ pound; in the second and third third, $\frac{1}{3}$ pounds.

The conclusions drawn by the author are that an infant on the first day must obtain at each nursing $\frac{1}{6}$ of his weight, and each following day one gramme more. If we reckon 10 to 12 nursings daily, on the second day it will receive 368.5 grammes (12 $\frac{1}{4}$ ounces), on the third 379.5 grammes (12 $\frac{3}{4}$ ounces), etc.

*Primary Carcinoma of the Kidney in Children; Two new Observations.*¹—The first case was one of a young girl four years old, in whom the left kidney was affected and entirely destroyed by a medullary cancer. Its weight was four kilogrammes. There were metastatic deposits in the left lung. In the second case there was also a medullary cancer of the left kidney in a young girl eight years old, and also metastases in the liver. In this case was worthy of notice an abundant development of wooly hair; also on the pubes, and in the axilla a growth of hair similar to that found after puberty. There was a vaginal mu-

¹ Deutsches Archiv für klin. Medicin. Band xvi. Centralblatt für medicinischen Wissenschaften, April 8, 1876, No. 15.

the discharge. The hair continued to increase in growth, and the genitalia began to take a development as in grown-up young women, and the white tint of the child became much darker. The explanation of the congestion and early development of the genitals was found in the fact that both internal spermatic arteries were uncommonly large. In neither case was there any hereditary predisposition.

*Fœtal Condition of the Lungs in New-Born Children that lived and cried after Birth.*¹—On the 8th of January a woman gave birth to three boys, when seven and one half months pregnant. At the time of birth two midwives were present in attendance. The second child followed rapidly the first, and both came into the world alive; the third was still-born. The first child began shortly after its birth to cry; likewise the second. Both children continued to cry whilst being washed and dressed, and continued to do so for a considerable time afterward. The cry was so loud as to be distinctly audible in a room separated from the sick chamber by two closed doors and a corridor. Both children died about half an hour after they were born. The autopsy on the following day showed, of first child: Stomach distended with air, which extended into the commencement of the duodenum. Otherwise there was nothing abnormal in the abdominal cavity. Both lungs showed entire absence of expansion, were of bluish color, and firm consistence. Heart and pericardium normal. There were no ecchymoses in the substance of the heart or of the pericardium. The heart and lungs together sank in water; each lung separated from the heart also sank in water. Notwithstanding portions were cut from every part of the lungs, there was not found any portion that did not sink, and while under water it was impossible to press out any bubbles of air from any portion. Autopsy of second child: There was no air in the stomach or intestines; in the stomach there was a small quantity of a whitish, albuminous fluid. Lungs not distended, bluish, and of firm consistence, except on the lower border of the right upper lobe, where there was a reddish colored place the size of a half pea. This small portion of lung floated on water. The entire remainder sank. Heart normal. There were no subpleural or subpericardial ecchymoses.

In these two cases is found a new evidence of the possibility of lungs being entirely empty of air, and incapable of floating on water in new-born children, who had demonstrated by movements and loud crying that they had lived after birth.

According to views generally prevalent, the possibility of such a condition of the lungs as was found at the post-mortem would not be allowed in infants who had cried, as was the case in these. The first child would perhaps have been exhibited as one born alive, owing to the distention of the stomach with air; the second child would, too,

¹ Dr Erman, Hamburg, Virchow's Archiv, March 28, 1876.

perhaps have been admitted to have breathed once, owing to the small place in one lung above mentioned as containing air.

Observations analogous to the above have, it is well known, been made time and again, and also reported, without having up to the present time received credit, owing to the difficulty of explaining them.

Maschka's¹ explanation appears to the author to have the most weight. He, together with Czermak, refers to the change in shape of the cavity of the mouth and of the pharynx, the power of creating sounds, and finally, as Billard before him, admits also the power of air which merely passes in and out of the bronchi to set in vibration the vocal chords, and to produce tones. The views of Simon Thomas, adopted also by Schroeder,² do not appear to the author at all tenable, not being in harmony with the action of the lung tissue containing air in general, nor with that observed in the two cases above given. Thomas's explanation is, that the lungs of these two children at first contained air, but that this air at the end of life, through the elasticity of the lung tissue, was entirely driven out. Both the above authors claim that in such children a time arrives after their birth when the strength and powers of resistance of the respiratory muscles diminishes, and, as a consequence the expiration which takes place, owing to the elasticity of the lungs, expels a greater amount of air than was taken up by the previous inspiration. There is no denying that were such a state of things to go on for a sufficient length of time, the result claimed would be accomplished, and the lungs be found entirely empty of air and of fetal consistency.

There is one obstacle to the acceptance of such a proposition : that a complete expulsion of air from the lungs by the power of the elastic tissue has never been observed previously, nor was it found in the two cases above reported at the autopsy.

Both Schroeder and Simon Thomas, in two cases of new-born children who lived after birth, and cried, respectively, one half hour and seventeen hours, and in whom the lungs were found empty of air and incapable of floating in water, experimented by blowing them up, with the result of finding that a large amount of air was subsequently expelled, but in neither case was there a complete emptying of the inspired air. The argument that there was a post-mortem loss of elasticity, and consequently that only a portion of the air was expelled, can be opposed to this experiment. There is at any rate no proof that can be offered to substantiate the above explanation.

The author in conclusion expresses the belief that for the present the question "Must there be necessarily air in the lungs, when a new-born

¹ Maschka. *Leben der Neugeborenen ohne Athmen.* Prager Vierteljahrsschrift, Bd. 73, s. 66.

² Schroeder, *Kann aus Lungen Neugeborner, die geathmet haben, die Luft wieder vollständig Entweichen.* Archiv für klinische Medicin, Bd. 6, s. 415.

child lives an hour or more and cries?" cannot be so surely decided as Schroeder attempts, who says, "If a child makes quiet and regular respiratory movements, and thus lives for an hour and cries aloud, air must of necessity have entered the lungs."

As seen at the autopsy, there was without the slightest doubt neither air nor any other contents in the lungs; but the lungs were collapsed, and in exactly the same condition as is found in infants which have never breathed; it follows that the air must have again left the lungs.

THE TRANSMISSION OF SYPHILIS.¹

THIS monograph is certainly one of the most praiseworthy clinical studies which has appeared for several years. The great interest of the question under discussion is generally conceded, and it is a matter for congratulation that in this brochure the author has approached it without bias, has been supported by sufficient facts, and that he has therefrom drawn conclusions warranted by them. It is strange, still it is nevertheless true, that the majority of articles treating of the hereditary transmission of syphilis have been written in support of the now so-called Cullerier theory, that the father is powerless to transmit syphilis to the offspring, and that this accident could never occur except when the mother herself was syphilitic,—in short, that the mother alone is capable of transmitting syphilis to the child. There were several reasons incident to the question which tended to the quite extensive acceptance of this doctrine; but it is very probable that its positiveness of statement, unqualified by any modifications, did much to cause it to be so generally received. The want of a proper field for study has also been a serious drawback to the solution of this important question. Kassowitz, however, as he states in his introduction, has had an abundant field and large opportunities, and he certainly has made good use of them. In addition to his own rich material he presents to us the cases and views of others, whose opinions he subjects to a searching analysis. He first considers quite fully the present state of opinion upon the question as to the relative part taken by the mother and father in the transmission of syphilis to the child; that is, whether a healthy woman can bring into the world a syphilitic child, the father being syphilitic; or whether, the father being healthy, a syphilitic mother can bear a healthy child. He briefly but tersely considers the various causes which have led toward different opinions, and concludes that various facts have been confounded together, such as infection of the semen and of the ovum with placental infection; and he thinks further, also, that observations have been made in a narrow, one-sided manner; as for instance, syphilographers deny the immunity of the mother for the reason that they, being specialists, are generally consulted by syphilitics; and, on the other hand, the physicians for children's diseases, seeing syphilitic children brought by healthy and blooming mothers, conclude that the latter possesses an immunity. The author then considers the theory of

¹ *Die Vererbung der Syphilis.* By DR. M. KASSOWITZ. Vienna: W. Braumüller. 1876.

transmission in general and its relation to the inheritance of syphilis. The ovum of the female being fructified by the semen of the male, a new being is formed which partakes of the character of the two parental organisms. He thinks that even as physiological peculiarities may remain latent and not be perceptible for years, so also may pathological peculiarities, such as malformations, phthisis, cancer, etc. Many facts prove that such inheritance occurs from both parents. The influence of the father only extends to the period of impregnation, while that of the mother is continued until birth. This suggests the question, Can a mother, through the utero-fetal and later placental circulation, transmit to the newly developed individual any of those qualities which it receives at the time of fertilization of the ovum? Can she transmit to it any corporeal or physiological power, or the capacity for the development of such? Kassowitz says that no facts bear out these suppositions, but that by means of a healthy nutritive material she may invigorate the characteristics conveyed at impregnation or interfere with their progress by insufficient nourishment. He thinks that such diseases as the exanthemata may be conveyed from the mother to the fetus; therefore disease reaches the unborn child by the fertilization of the ovum, or by direct inheritance, or by the passage of the poison through the utero-placental circulation or intra-uterine infection. Kassowitz thinks that it is very improbable that two processes so different can produce similar results, and to put the matter in a more forcible way he formulates the two following questions: 1st. Can a non-syphilitic mother bear a syphilitic child? 2d. Does syphilis acquired by the mother during the course of pregnancy affect the offspring which at conception was healthy? He is positive that healthy women can bear syphilitic children, and to prove the point adduces strong evidence, not only in numerous cases reported by others, but also by the statistics, taken with great care, of the Vienna Foundling Hospital. These contain records of four hundred cases of hereditary syphilitic children, of whose mothers one hundred and sixty-six were found to be healthy; one hundred and twenty-two were syphilitic, while the rest were of doubtful conditions. These women were examined with the greatest care, and were under observation for years; moreover, when regarded as healthy they were not subjected to treatment. This removes, it will be seen, a powerful objection. Certainly these facts are worthy of consideration. Kassowitz shows the weak side of the arguments of Cullerier and others by quoting their cases, which are mainly those of syphilitic men who marry and whose wives bear healthy children. He makes the very strong point against them that they do not say anything as to the treatment and the extent to which it has been carried in these cases, and it is well known that by a mercurial course the transmissive power of syphilis may be destroyed or temporarily held in check. He further shows that the cases of these observers are so meagrely reported, and so lacking in very essential points, that they are not worthy of consideration in forming conclusions in such an important and delicate question.

He then considers the second question, Can the mother of a child, syphilitic from its father, remain healthy? Before answering the question he discusses the belief of many observers, that it is possible for a mother to be infected by her syphilitic child. It is thought that this occurs in three principal ways:—

1. The infection of the healthy mother through the placental circulation from the foetus diseased from its father.
2. The infection of the mother at the time of conception by syphilitic semen.
3. The infection of the mother by the semen of a man in whom syphilis is latent and who is free from infecting lesions, independently of conception or fertilization.

Kassowitz denies each of these modes of infection. He thinks that the theory of infection by the ovum, the *choc en retour* of Ricord, which was once advanced by Hutchinson, is based on cases badly observed and defective in essentially important details. According to this view, this mode of infection is a slow poisoning of the system by successive pregnancies, while facts prove that the infection of the system by syphilis is always at first severe, and it then tends to wane until it finally dies out. It will be seen that this course is at variance with what is claimed to occur in the *choc en retour*. Kassowitz then shows that in point of time the evidences of syphilis in the mother often point to infection from without rather than from the foetus; as for instance, when the manifestations appear shortly after conception, when the disease in the child is not recognized, and certainly if present is not in a state so advanced as to warrant the assumption that the syphilis of the mother is derived from it. Then again, after several pregnancies a mother gave evidence of tertiary lesions, or of a cachexia, and it is assumed that she was rendered syphilitic by her children. The author thinks that these cases are either insufficiently observed or their nature is misunderstood. The tertiary lesions may follow secondaries which have passed unobserved and were due to contagion from without, and the cachexia may be of simple origin and not due to syphilis. Kassowitz acknowledges the force of Colles's observation that mothers have never been known to be infected by their own children, and offers nothing new in explanation. As to the second mode of infection, which was first advocated by Bärensprung, that the semen of a syphilitic man was harmless until fertilization occurred and then syphilis would result, Kassowitz shows the weakness of the argument and the cases quoted in support of it, and thinks that the infection is of the ordinary kind by means of a sore on the genitals. This brings him to the question whether syphilis acquired during the term of pregnancy can be conveyed to a foetus healthy at conception. He thinks that this view is rather more tacitly accepted than arrived at by careful observation. He brings forward the damaging fact that this does not always occur, whereas if this supposition were correct, infection would not be of exceptional occurrence. The exact time at which this infection is possible is in doubt, but some authors specify certain months in which the child escapes. The fact of the case is simple, namely, that syphilitic mothers can bear healthy children. In order to establish this mode of transmission, Kassowitz thinks that the following conditions are necessary: 1st, That the health of the father at the time of conception is proved. 2d, That the health of the mother at the time of conception is also proved, and the exact time of her subsequent infection be accurately determinable. The infecting ulcer or some of the early lesions should have been seen by the observers. 3d, The syphilis of the child must be

proved beyond a doubt. The fact that children are prematurely born, still-born, or sickly, without a previous outbreak of syphilitic lesions, should not be taken as a proof of syphilis. If all of these facts are not fully brought forward, cases are not worthy of consideration, and Kassowitz shows that there is not a recorded instance which will bear this thorough analysis; therefore he rejects this theory. He further quotes the fact as occurring in cases of twins, one of which is more profoundly syphilitic than the other, even in some instances one being free, as tending to prove that the mother alone is not the infecting medium. Kassowitz, as a result of his studies, formulates the following conclusions: a child whose parents were healthy at conception will not become syphilitic, even if its mother becomes thus affected during the course of the pregnancy. Such infection may induce abortion, or early birth, as any severe disease may, but not by transmitting the disease to the fetus. He also thinks that the syphilitic poison does not pass by the circulation from the mother to the fetus. The author then considers the nature of the syphilitic poison and its difference from that of the exanthemata. That of syphilis is a fixed contagium and is contained in solid particles, hence must be transmitted with the elements of the organism, whereas that of the acute exanthems is volatile, may be transmitted by the breath; and while that of syphilis, owing to the peculiarities of the placental circulation, cannot pass either from mother to fetus or the reverse, the contagium of the exanthems may reach the fetus through the fluid parts of the blood. The author thinks that the capability for transmission of syphilis begins at the moment of the appearance of general syphilis, and from that time its power gradually wanes. It may be observed that there are periods of latency in which transmission does not take place; this is due either to the peculiar course of the disease, which has exacerbations, or to the action of a mercurial treatment. Perhaps no more important point occurs in the whole book than that relating to the powerful influence of mercury in preventing the transmission of syphilis. Finally, as to the point of late so extensively considered, whether the father's influence is potent in this transmission, Kassowitz expresses the opinion, based on cases, that he is more frequently the cause of syphilis than the mother is. He gives statistics to prove this point, which it will be seen has a very great practical import. Space will not permit us to consider in detail the chapters on the intensity and duration of the transmissive power, of the latency of inherited syphilis, and of its relations to other constitutional diseases. Though very interesting, they contain nothing particularly new or important. It will be seen from this hasty review that the author has considered the subject in all of its bearings, and it may be added that he has done his work conscientiously and thoroughly.

— R. W. T.

EXHIBITS OF THE MEDICAL DEPARTMENT U. S. A. AT PHILADELPHIA.

FIVE pamphlets by J. J. Woodward, Assistant Surgeon U. S. A., in charge of the representation of the Medical Department U. S. A. at Philadelphia, give in a concise way a description of some of the exhibits of the U. S. A. Medical Department at the International Exhibition of 1876.

Two papers devoted to the description of rail and water transportation of sick and wounded soldiers during the war of 1861-65 are very fully illustrated by plans of hospital cars and steamboats, which, together with the text, enables the reader to form an accurate idea of how much the medical department of the army contributed toward alleviating the sufferings of sick and wounded soldiers forced to undergo the hardships of the journey from battle-fields and camps.

The paper on Hospital Construction treats of field, tent, and barrack hospitals as employed during the late war; also of the present post hospital; one of the latter has been constructed, in all its details, by the government, at the Centennial grounds. It cannot fail to be of interest to medical visitors, especially as it contains, in addition to the usual paraphernalia of post hospitals, many interesting specimens of gun-shot and other injuries, which have been transferred from the Army Medical Museum at Washington. One of the pamphlets under consideration has for its title, *The List of Skeletons and Crania in the Section of Comparative Anatomy of the U. S. A. Medical Museum.* This list fills some fifty pages, and is intended, as the author states, for distribution among naturalists and others, for the purpose of showing the deficiencies of the collection and soliciting contributions.

Number five of this series of publications is a description by Messrs. Perot & Co. of their medicine wagon, familiar to most army surgeons during the war of the rebellion. Dr. Woodward disclaims responsibility of authorship in this paper.

We think the appliances treated of in these papers, and also exhibited at Philadelphia by the government, compare most favorably with the exhibits of any other nation. The forward step taken by the surgeons of the army cannot but be a source of gratification to their brothers in civil life.

REGULATING THE PRACTICE OF MEDICINE.

As long ago as 1872 the State of Texas passed a law regulating the practice of medicine. Every practitioner was required to register himself, stating his qualifications. In each county an examining board, composed of graduates of recognized schools, was appointed to inquire into said qualifications, and, if these were not satisfactory, to subject the applicant to an examination. The working of this law is said to have been very beneficial. During the past year this act has been amended so as to compel every one desiring to practice medicine to undergo an examination before a board composed of not less than three practicing physicians, appointed to serve two years by the presiding judges of the district courts of the several judicial districts of the State. The examination includes the following subjects: anatomy, physiology, pathological anatomy and pathology, surgery, obstetrics, and chemistry. It will be observed that *materia medica* is not included, and that the homœopathic question is thus avoided in the examination. A copy of this bill is to be found in a recent number of the *Philadelphia Medical Times.* To what extent homœopaths and other sects will be represented upon these boards under the operation

of this law does not appear. While it is desirable that the practice of medicine shall be withheld from the totally ignorant, it is also equally desirable to exact a proper standard of medical knowledge. We fear that this will vary greatly in the different counties, as in some the examining boards will be composed of the most heterogeneous elements. This law has the undoubted advantage of disposing of the more flagrant forms of charlatanism, but practically recognizes others, and does not procure a higher standard of education than may be brought about by any well-regulated state medical society. The experiment is undoubtedly a very important one, the difficulties surrounding a proper solution of the question being very great, and we shall watch the working of the law with great interest.

MEDICAL NOTES.

— Dr. Walter Channing died July 27th in his 91st year.

— Dr. James R. Chadwick has resigned his position as lecturer on diseases of women in Harvard University.

— Dr. W. A. Haskell, whose death we have to record, was born in Middlesex County, Massachusetts, in 1817. It may be of interest to state that Dr. W. A. Haskell was born exactly one hundred years after the birth of his great-grandfather, and that he commenced his professional work precisely a century from the time this great-grandfather entered upon his professional career, thus continuing this practice in the family through an unbroken series of over one hundred years. His mother was a descendant in a direct line of the famous John Cotton, of Boston, and Cotton Mather, D. D. Dr. Haskell studied medicine with his father, and also with Dr. George Bartlett, of Boston, and graduated at Dartmouth Medical School in 1839. He first practiced medicine in Deerfield, Mass., but in the fall of 1843 he decided to remove to the West on account of a slight hemorrhage of the lungs. He settled in Hillsboro', Montgomery County, Ill., where, as partner and successor of Prof. Wm. Herrick, of Rush Medical College, Chicago, he resided until the year 1864. For the last few years his health has not permitted him to continue the practice of his profession.

— At an informal meeting held in Philadelphia, at the rooms of the section of practical medicine, of the American Medical Association, Wednesday, June 7, 1876, after the election of a chairman and secretary, pro tem., it was resolved: To call upon such American physicians as had evinced a special interest in dermatology to unite in forming an American Dermatological Association, and that the meeting for organization be held in the University of Pennsylvania, Philadelphia, on Wednesday, September 6, 1876, at six p. m., or immediately after the close of the meeting of the section of dermatology and syphilology, of the International Medical Congress, on that day. All those who are desirous of joining this association can confer with the secretary, Dr. Bulkley of New York, or the chairman, Dr. Wigglesworth.

— Dr. Elisha Pope Fearing died at Nantucket, June 25, 1876. He was born at Wareham in 1785, entered Brown University in 1804, studied med-

icine with Dr. Andrew Mackie, of Wareham, attended lectures in the city of New York, and began the practice of his profession in Falmouth, Mass., in 1810. Sixteen years later he removed to Nantucket, to enter upon a large practice in that busy and growing town. Here he remained until his death, at the age of ninety years and eight months. His mind, always vigorous, was scarcely dimmed till the close of life, while a tenacious physique enabled him to conduct almost the entire midwifery practice of a population of from five to ten thousand for many years, and a general practice extending over a total of sixty-one years. He married a daughter of Rev. Henry Lincoln, of Falmouth, who survives him.

Dr. Fearing was one of the few remaining representatives of the generation that brought forth men like James Jackson, John Ware, and others. The principles of that generation were founded in shrewd observation; their theories never carried them off the firm basis of facts. A keen practical sagacity, a rich and well-used experience, an abundant medical reading and study, were well seconded in the case of Dr. Fearing by a habit of bold, decisive action, and render his name fit to be mentioned by the side of those worthies. His person was not easily forgotten. A short, compact frame, with a large head, a mouth full of determination, that seemed to poise its words, a quick, eager way of questioning, an eye that sparkled and a face that beamed all over with pleasure at meeting fresh faces or new ideas, a manner brusque, but tempered by courtliness, are well remembered by many among us.

BOSTON CITY HOSPITAL.

MEDICAL CASES OF DR. F. W. DRAPER.

[REPORTED BY C. W. BROWN, M. D.]

Cases of Sunstroke; Recovery. — CASE I. J. H., aged twenty-eight, a very well-developed, muscular laboring man, after exposure to the sun all day, was attacked at three P. M. with faintness and vertigo; his "head felt boiling." Similar premonitions had occurred forty-eight hours before, but without subsequent symptoms.

Between the attack of to-day (July 13th) and the time of entering the hospital at 5.55 P. M., there was an interval of unconsciousness; the patient was able, however, to walk into the hospital with assistance, and to answer questions, though with difficulty.

On examination the skin was found to be intensely hot and dry; the face flushed; there was marked subsultus tendinum. The temperature was 104.6°; pulse 111, full, bounding. In the process of moving to the ward, for which purpose he was placed on a stretcher, the patient struggled violently, and presently passed into an epileptiform convulsion. The pupils immediately before the seizure were dilated to their widest extent. The subsequent nervous symptoms were restlessness, jactitation, and occasional clonic, spasmodic movements. The head was strongly retracted. The pupils were closely contracted, except immediately before such spasmodic seizure, when they became dilated. The

eyes were turned upward in their orbits and fixed; the conjunctivæ were injected. In the midst of one of the convulsive seizures the breathing entirely stopped, and was restored by aid of artificial respiration. Pulse at the time not observed. The skin meantime was intensely hot. Upon the hands, forearms, and front of thighs was a petechial eruption resembling measles.

At eight P. M. the patient became quiet, sleeping very profoundly, and except slight restlessness at midnight convalescence was progressive.

Treatment. From six to seven P. M. cold was assiduously applied in the form of ice-bags to the head, and ice-water and ice to the surface of the body. At seven P. M. thirty grains of bromide of potassium were given by the mouth. At 7.15 P. M. four ounces of blood were taken from the nucha by cups. At 7.30 P. M., the pulse becoming very small and rapid, and respiration irregular in force and frequency, an ounce of brandy was given per rectum. At midnight the patient had forty grains of bromide of potassium.

Some time before entrance to the hospital he had received one third of a grain of sulphate of morphia subcutaneously and one drop of croton oil; the latter had no immediate effect.

Time.	Pulse.	Temperature.
5.55 P. M.	111	104.6°
6.35 "	140	107°
7.45 "	120	106.2°
8.20 "	102	104.4°
9.15 "	100	103.2°
10.15 "	103	102.6°
11.30 "		102.2°
2.15 A. M.		101°
4 " "		100.4°
8 " "		99.4°

July 14th. The patient was quiet after midnight. This morning is fully convalescent. Bowels have moved freely. Eruption on the skin has disappeared. Temperature, P. M., 99.6°. Pulse 72.

July 15th. Temperature 99°. Pulse 60. Discharged, well.

CASE II. C. S., aged fifty, a healthy laboring man, a moderate user of alcoholic liquors, but never to excess, entered July 18th. He had taken but "two glasses of liquor" on that day. In the afternoon of July 18th, an oppressively hot day, the patient, without any premonitory symptoms, became unconscious, and fell in the street; he was brought to the hospital at 5.10 P. M., about half an hour afterward. At the time of his entrance his skin was dry, burning, 107.8°; the pulse was full, bounding, compressible, 140. Respiration was stertorous, moaning, 35. Pupils contracted. Faeces and urine passed involuntarily. No reflex movements caused by irritation of extremities or conjunctivæ. At six P. M. convulsive movements began to appear, preceded by retraction of the head and burrowing into the pillow. Later, the convulsions became more severe, and were marked by loud cries and struggling, opisthotonus, rigidity of muscles, and turning of body towards right side. The convulsions recurred at increasing intervals until eleven P. M., and each time were controlled by ether. After eleven P. M. the patient began to manifest signs of consciousness, and slept quietly most of the time, but occasionally waked in a frightened manner. During the convulsions the pupils became widely dilated.

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A petechial eruption resembling measles was present on the arms at the time of entrance, but became more marked during convulsive attacks, fading in the interval to brighten with each severe paroxysm.

Treatment. Cold was applied, by means of ice-bags to the head and ice-water to the body, until seven P. M.

On several occasions the pulse became weak, and brandy was given subcutaneously, the rectum having rejected enemata. At eleven P. M. the patient had thirty grains of bromide of potassium, and this was repeated at one A. M. on the 19th.

Time.	Pulse.	Temperature.
5.10 P. M.	111	107.8°
5.20 "	140	108.2°
5.40 "	146	107.4°
6.10 "	124	105.5°
6.55 "	156	103.6°
7. 5 "	135	103.4°
7.35 "	144	104.9°
7.55 "	150	105.4°
8.10 "	140	105.7°
8.20 "	140	105°
8.45 "	146	104.5°
9.45 "	120	104.6°
10.30 "	130	103.4°
11 "	141	102.2°
12 midnight.		101.6°
1 A. M.	114	101.2°
3 "	112	100.2°
5.40 "	100	100.2°
8.25 "	104	99.8°

Respiration ranged from 30 to 44 per minute.

July 20th. Fully convalescent. Temperature 98.9°. Pulse 80.

July 21st. Discharged, well.

Acute Rheumatism, with Cerebral Complication ; Death. — J. D., aged thirty, entered July 8th, with a history of previous attacks of rheumatism in 1863 and 1864 ; otherwise he had been healthy until six days ago, when he was attacked with pain, swelling, and tenderness in nearly all the joints of the body. The shoulders, right elbow, wrist, and knee were affected at entrance, all being covered with a red blush. Pulse 120, small ; temperature 101.4°. Salicine in fifteen-grain doses every hour was prescribed, and all affected joints were wrapped in cotton and covered with oiled silk.

July 9th. There was less pain and swelling in right knee ; the left knee was swollen, stiff, and painful. A systolic murmur was heard at the left of the sternum. The aortic sounds were clear. The patient slept very little during the night, although he had ten grains of Dover's powder. Perspires very freely.

July 10th. Slept better. Some pain on motion, none when quiet. Four hundred and thirty-five grains of salicine had been taken. P. M. Complains of pain in shoulders.

July 11th. Much pain all night. Slept little. Has had no nausea or headache. Has taken three hundred and thirty grains of salicine additional. Omit salicine. Ten grains of salicylic acid were given every hour in pills.

P. M. After the patient had taken eighty grains of salicylic acid the pain was much less. The joints were slightly tender on pressure; could be flexed without causing much pain. Some nausea. Omit acid in pills and give in solution.

July 12th. Slept soundly all night. This morning, after taking one hundred and ten grains of the acid, the patient could flex all the joints freely without pain, except the left shoulder, where the pain on motion was slight. No tenderness on pressure, except on left shoulder.

July 13th. Had a restless night, but not because of pain. Pain not severe, and confined to right knee. Took thirty grains of acid in the night and eighty the day previous. This morning the patient complained of nausea, and the acid was omitted temporarily. One eighth of a grain of morphia was given by mouth, but it did not cause sleep. The nausea continued during the day, and the patient refused the salicylic acid, but ate the usual amount of food at dinner. A friend visited him between two and three P. M., and the two chatted quite freely; but afterward the patient was very restless, tossing about the bed, and because of general discomfort proposed to get up, but was induced to lie down. About 4.40 P. M. his face suddenly became flushed, and very soon livid; immediately he passed into a convulsive state, characterized by general clonic spasms, frothing at the mouth, the foam being bloody from his bitten tongue; there was no rigidity or opisthotonus. The pulse was full, bounding, and very rapid. The heart's impulse was rapid but regular. No pericardial friction was detected. The skin felt very hot, and the temperature was 110.8° in the axilla. The patient was placed in a bath, the water being of the temperature of Cochitiuate as drawn from the faucet. Spasmodic movements had then ceased, and were followed by coma. The pulse became slower and weak. The patient was given an ounce of brandy by rectum, which temporarily increased the strength of the pulse. The respiration was regular. The skin became perceptibly cooler, but the pulse and respiration gradually failed, the respiration first, and the patient died at 5.35 P. M., soon after being removed from the bath. The temperature, while the salicine was being taken, ranged from 100.2° in the morning of the 9th, to 102.6° in the evening of the 10th. Under salicylic acid the temperature fell in the morning of the 12th to 98.8°, but rose to 102° at night, and was 101° in the morning of the day of death.

Autopsy eighteen hours after death. Post-mortem change well marked. Arachnoid and pia mater congested, but otherwise normal. A drachm of bloody serum in each lateral ventricle. Brain substance normal. Heart pale, soft, and friable. Valves unchanged. Nothing remarkable noticed about other organs.

LETTER FROM PHILADELPHIA.

MESSRS. EDITORS.—The world's convention of the homeopaths recently held in Philadelphia did not develop anything strikingly new. There were representatives from every quarter, and numerous papers were read. Many wise, many learned things were said; among others, a Philadelphia homeopath made the remarkable statement that, notwithstanding the oft-repeated

assertion of Charles Sumner's physician during his life that Sumner's heart was diseased, the post-mortem at Boston, made by the most distinguished physicians of the day, revealed the fact that neither the heart nor any other organ was diseased. "We here present know," said this wiseacre, "that Sumner died from mortified pride." A New Bedford delegate then said that the assertion that Sumner died of mortified pride was very poor pathology, and stated that from his own knowledge he believed Sumner died from the injudicious administration of a hypodermic dose of morphia, superadded to the effect of a very heavy dinner he had eaten on the day of his death.

The first-mentioned individual made one honest homeopathical assertion, namely, "the infinitesimal dose early became a necessity of homœopathy, and it is a necessity to-day." He might have added that if homœopaths had been true to the Hahnemann dose they possibly might be considered only weak-minded but honest; whereas nowadays they claim the right to give any medicines in any dose they feel inclined.

The reports of the various Philadelphia dispensaries for the last year show increasing usefulness of these charities, which are especial benefits in these days of lack of money.

The old Philadelphia Dispensary, which was instituted in 1786, reports 7826 patients treated in the house and 1348 attended by district physicians. The eye and ear department, under control of Dr. George Strawbridge, reports 2030 patients and 15,968 visits; the obstetric department relieved 214 cases of various sorts.

Dr. Duhring's report of the work done in his dispensary for skin diseases shows that he has treated 371 new patients and received 2368 visits.

Dr. Charles Burnett conducts the Philadelphia Infirmary for Diseases of the Ear. His second annual report indicates that the infirmary is growing in reputation. He reports 350 new patients for 1875, double the number treated during the first year of the institution.

The other dispensaries in town probably treated thirty thousand cases during the year 1875. With one or two exceptions, all our dispensaries furnish medicines as well as advice. The exceptions give advice and prescriptions, which are dispensed by certain liberal druggists at a cost to the patient which is merely nominal.

The little hospital in the exposition grounds is a daily blessing. Within three hours on the opening day a case of fracture, one of contusion of the head, one of exhaustion, one of congestive chill, and a crushed hand were treated by the physician on duty. It is rather remarkable that out of a crowd numbering upward of two hundred thousand, exposed to the frightful crush in certain portions of the grounds, so few were injured. At that time, however, and indeed for many days subsequently, the whereabouts and even the existence of the hospital were unknown to many who would have gladly sought medical relief. The guards, either through stupidity or willfulness, required several weeks in order to learn the location of the hospital building, so that many persons left the grounds in order to find a physician who otherwise would have gone to the medical department. Even those who wisely originated this branch of the Centennial Commission probably did not realize how invaluable it would prove

to visitors, exhibitors, etc. In the early days of the Exhibition I should judge that twenty patients was the average daily number treated, but little by little the daily papers, correspondents of distant journals, persons who had been treated, and finally the placards of the medical department, which after some delay were posted throughout the grounds and buildings, acquainted the general public with this courtesy of the Centennial Commission, and since the middle of June the hospital staff have treated an average of three hundred patients per week. Among these are occasional fractures, dislocations, and machinery-crushing cases; wounds of the minor sort, such as lacerations, cuts, pinched fingers and toes, are rather common. There have been two or three deaths, the result of falls from buildings and apoplexy. One frantic female attempted a laudanum suicide, but was saved by the physician on duty.

The majority of the cases are the result of hot weather, exhaustion, ice-water, and gastronomic rashness. Diarrhoea and cholera morbus are very frequent. There have been, too, a fair array of patients whose troubles were the result of chronic ailments of heart, brain, and lungs. Contrary to expectation, there have been no confinement cases, and only one threatened abortion; but many ladies who overtasked themselves at sight-seeing during their periods have been provided with medical aid and a resting-place. No lady should visit the Exhibition during the menstrual epoch. The fatigue which attends even a superficial view of the immense number of attractive objects in the various buildings cannot properly be borne by any person who is even temporarily ill.

The hospital stands in Lansdowne Ravine, directly behind the Judges' Hall, is numbered 133, and may be also known by its white flag bearing a red Geneva cross. An ambulance stands before the door from morning till night, in readiness to bring patients from any part of the grounds. Stretchers have been distributed to all the buildings and guard-houses, and everything has been done to perfect the facilities of this department.

I should say that notwithstanding the terrific heat of the past three weeks only one case of well-defined thermic fever has been brought to the hospital. The remaining cases which were classed under the head of exhaustion by heat were not seriously affected.

The medical visitor may with benefit devote at least one entire day to the examination of the medical, surgical, anatomical, and histological exhibits of the Exhibition. In the main building these exhibits are chiefly surgical, chemical, and therapeutical. They are, of course, both domestic and foreign, not classified in one section, but each in the department of its own country, so that in order to find them all a certain amount of patient search is necessary. There are surgical appliances of every sort. The American at once recognizes the superior ingenuity, elegance, and simplicity of home productions, and this refers especially to such as relate to the treatment of fractures. Some of the foreign appliances are veritable curiosities. Among all these surgical exhibits that of Messrs. Codman and Shurtleff, of Boston, is by far the finest and most varied. In the Japanese section, at its extreme southern end, is a little case of surgical instruments manufactured by a Tokio mechanician, very well made, rather clumsy it is true, but a really excellent imitation of the modern instru-

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ments. The display of dental instruments, chairs, and other conveniences is very elegant, and bears testimony to the remarkable ingenuity of the American mind. Nor must I forget the many cases of medicines, liquid and solid. Some of the crystalline preparations are marvels of beauty.

In the Austrian section, P, 28, may be seen exquisite models illustrating the normal and pathological anatomy of the human ear. There are forty-nine specimens in all, of which forty-four show the temporal bone in various conditions. The remaining five typify the relation of the ear to the base of the skull, and also show the muscles of the soft palate and the Eustachian tube. There are, besides, plaster casts of certain diseases of the membrana tympani. The entire collection is the contribution of Pollitzer, of Vienna, who devoted many months to the work of preparation. It is said that the College of Physicians has secured this collection, probably by means of the Mütter museum fund.

The United States government exhibits a model hospital, in personal charge of Dr. Yarrow, U. S. A., whose gentlemanly courtesy makes it a pleasure to visit this building. In room No. 4, where the medical visitor is asked to leave his autograph, are several folios of superb photo-micrographs of the blood-corpuscles of man and the dog, prepared under various microscopes, the average diameter of the corpuscles shown in each picture and the power of the object glass used being given in figures. There are also photographs of various sorts of wool and hair, capillary blood-vessels, lymphatics, etc., all being the work of Dr. J. J. Woodward. A portfolio of fine photo-micrographs of tissues of the human body, prepared by Dr. W. Thompson, U. S. A., is not by any means the least interesting of the collection. On the lower floor of the building is a model ward, dispensary with a full assortment of medicines, a kitchen, etc. In a large apartment at the northern end of the building are beautiful models of railway conveyances for sick and wounded; also section models of invalid steam transports, several models of military hospitals, and anatomical preparations from the Army Museum at Washington. Rooms on the upper floor are devoted to the exhibition of army medicine chests, surgical instrument cases, and every variety of medical and surgical appliance. In the rear of the building stands a row of army vehicles, including ambulances, medical and provision wagons. I have forgotten to mention the two or three score of photographic exhibits of amputations and resections. These, of course, hang within the building.

Perhaps the most striking and attractive object in the structure is the large oil painting by Eakens, which hangs in the model ward. This painting is a portrait of Prof. S. D. Gross, and represents him, surrounded by the members of his clinical staff, in the performance of an operation in the college clinic. He has made an incision into the leg of the patient, who lies stretched upon a bed at the professor's left hand. Dr. Gross has paused in his operation in order to explain the disease, or its remedy, to the students who are dimly seen in the background. The painting being intended as a portrait of Dr. Gross, and not primarily as the representation of a clinic, the artist has thrown the accessories out of focus and concentrated his force upon the most prominent figure. Professor Gross stands erect, one hand resting upon the bed; with

the other, which holds a scalpel, both knife and fingers stained with blood, he is making a slight gesture, as if to enforce the words he is uttering. The portrait is of life-size and a most admirable likeness of the strong face and tall figure of the surgeon. One can hardly conceive of a more perfect resemblance. At the right of the professor is a most expressive figure of a female, whose clenched hands and general attitude of horror are in strong contrast to the concentrated attention of the students in the seats above the operator. The clinical assistants are grouped around the patient, one mopping out the wound; others separate the lips of the cut; another administers chloroform (Gross never uses any other anesthetic); the clinical clerk is writing at his desk; in a doorway in the background stand Dr. S. W. Gross and a janitor. These are all faithful portraits. About slipping to the floor from the operating table is a gouge-chisel, which suggests that the operation is for necrosis. Cases of instruments and other surgical necessities are ranged upon a side-table, and all the well-known detail of such scenes are represented. The principal figures are illuminated by a sky-light directly over their heads. Thus the central group is brought out in strong relief, the students being in shadow. The one serious fault in the picture is the manner in which the body of the patient is treated. It is so much foreshortened and so covered by the arms of the clinical assistants that it is a perfect puzzle. The artist's intention evidently was to render this portion of the painting as free from the disagreeable as possible. He has succeeded so well as to bring upon himself rather severe criticism. Indeed, it is difficult to discover whether the incised limb of the patient be the leg or an attenuated thigh. It more nearly resembles the latter. As a whole, however, the picture is a great work, and wins much admiration. It was originally offered to the art committee, but the details of the picture proved so shocking that two or three members of the committee actually became faint, and it was deemed wiser to reject it; so that although there are in memorial hall pictures which are far more gory, this fine work of art at last found its way to the government hospital building. Let me advise those of your readers who visit the Exhibition not to miss a view of it.

The terribly warm weather of the past three weeks in Philadelphia has been the cause of almost unprecedented mortality. In a single week in July, 1872, there occurred in this city 885 deaths. This extraordinary death-rate was chiefly the result of excessive heat, although partially due to small-pox. Neither before nor since has there been so large a number of deaths in Philadelphia in a single week. The nearest approach to it was during the first week of the present month. There were 854 deaths. But during this summer no contagious disease has prevailed or added in a marked degree to the fearful list of mortality. The unusual loss of life must be ascribed to the tropical, life-sapping weather.

The list of deaths includes 488 males, 366 females. Adults 342, minors 512. Under one year, 337; from one to two years, 97; two to five years 45; under five years, 479; over fifty years, 154. By cholera infantum, 213; cholera morbus, 6; sunstroke, 80; consumption, 42; convulsions, 49; inflammation of the brain, 24; marasmus, 28; debility, 32; congestion of the brain, 63, etc. In July, 1872, the mortality among minors was proportionately

greater than during the first week of this month. The number of deaths from cholera infantum was nearly fifty per cent. greater four years ago than during the present summer. The mean temperature has been slightly higher this month than during a corresponding period in 1872, but the nights have been comparatively cooler, hence the mortality among young children has been measurably less. The mercury has at times stood as high as 106° in the shade, and the blazing weather still continues. Perspiration is so abundant that it is nearly impossible to write. The average maximum temperature during the first fourteen days of the present month was 97.5°; minimum, 73°. During a corresponding period in 1872, maximum, 91°; minimum, 77°.

PHILADELPHIA, July 20, 1876.

COMPARATIVE MORTALITY-RATES FOR THE WEEK ENDING JULY 22, 1876.

	Estimated Population.	Total Mortality for the Week.	Annual Death-Rate per 1000 during Week.
New York	1,060,000	1000	49.06
Philadelphia	825,000	587	36.99
Brooklyn	506,223	407	41.81
Chicago	420,000	264	32.69
Boston	350,000	242	35.55
Providence	101,700	71	36.67
Worcester	50,000	35	36.40
Lowell	50,000	40	41.74
Cambridge	48,000	23	24.91
Fall River	45,000	33	38.13
Lawrence	35,000	29	43.08
Lynn	33,000	10	15.76
Springfield	31,000	12	20.13
Salem	26,000	21	42.00

Normal Death-Rate, 17 per 1000.

BOOKS AND PAMPHLETS RECEIVED.—Practical Treatise on Materia Medica and Therapeutics. By Roberts Bartholow, M. A., M. D. New York: D. Appleton & Co. 1876. (For sale by A. Williams & Co.)

A Manual of Percussion and Auscultation; of the Physical Diagnosis of Diseases of the Lungs and Heart, and of Thoracic Aneurism. By Austin Flint, M. D. Philadelphia: Henry C. Lea. 1876.

Hay Fever, or Summer Catarrh; its Nature and Treatment. By George M. Beard, A. M., M. D. New York: Harper & Brothers. 1876.

Theory of Medical Science. By William R. Dunham, M. D. Boston: James Campbell. 1876.

A Plea for Principles and Conservatism in the Treatment of Diseases Peculiar to Females. By William Abram Love, M. D. Reprinted from the Atlanta Medical and Surgical Journal. 1876.

On the Successful Treatment of some Forms of Peripheral Paralysis. By John Van Bibber, M. D. Reprinted from the Transactions of the Medical and Chirurgical Society of Maryland. 1876.

The Ready Reference for Physicians. By Richard J. Dunglison, M. D. Philadelphia. 1876.